WHAT IS CLAIMED IS:

1. A method of potentiating the response of a cell to DNA damaging agents comprising the steps of:

(a) administering a virus to the cell; and

(b) exposing the cell to a DNA damaging agent.

2. The method according to claim 1, wherein the virus is adenovirus, HSV-1, retrovirus, or NDV.

3. The method according to claim 2, wherein the virus is adenovirus.

4. The method according to claim 2, wherein the virus is HSV-1.

5. The method according to claim 1, wherein the DNA damaging agent is ionizing radiation.

6. The method according to claim 1, wherein the DNA damaging agent is an alkylating agent.

7. The method according to claim 6, wherein the DNA damaging agent is mitomycin C.

8. The method according to claim 1, wherein the cell is a human cell.

9. The method according to claim 1, wherein the cell is a malignant cell.

10. The method according to claim 9, wherein the cell is a brain cancer cell.

11. The method according to claim 9, wherein the cell is a breast cancer cell.

12. The method according to claim 1, wherein the cell is located within an animal, and the virus is administered to the animal in a pharmaceutically acceptable form.

13. A method of controlling growth of a tumor comprising the steps of:

(a) delivering to the tumor a therapeutically effective amount of a virus that contains a DNA molecule comprising a radiation responsive enhancer-promoter operatively linked to an encoding region that encodes a polypeptide having the ability to inhibit growth of a tumor cell; and

(b) exposing the cell to an effective expression-inducing dose of ionizing radiation.

14. The method according to claim 13, wherein the virus is an adenovirus, herpesvirus, or retrovirus.

15. The method according to claim 14, wherein the virus is an adenovirus.

16. The method according to claim 13, wherein the encoding region that encodes a polypeptide having the ability to inhibit growth of a tumor cell encodes TNF-α.

17. A process of sensitizing cells to the effects of ionizing radiation comprising transfecting the cells with an adenovirus vector and exposing the cells to an effective dose of ionizing radiation.

18. A method of enhancing the effectiveness of radiotherapy in a mammal comprising administering to the mammal an effective amount of a pharmaceutical composition that contains a virus according to claim 2.

19. The method of claim 18 wherein the administering is by means of an intravenous injection of from about 10^8 to about 10^{11} virus particles.

20. The method according to claim 18, wherein the administering is by an oral route.

21. The method of claim 18 wherein the mammal is a mouse.

22. The method of claim 18 wherein the mammal is a human.

23. A process of inhibiting growth of a tumor comprising the steps of:

(a) delivering to said tumor a therapeutically effective amount of a selected virus; and

(b) exposing said cell to an effective dose of a DNA damaging agent.

24. The process according to claim 23, wherein the virus is an adenovirus, HSV-1, or a retrovirus.

25. The process according to claim 23, comprising injecting into a tumor site a therapeutically effective amount of a pharmaceutical composition comprising a virus.

26. The process according to claim 25, wherein the tumor is contacted with a DNA damaging agent by irradiating the tumor site with X-irradiation ,γ-irradiation, or β-irradiation.

27. The process according to claim 25, wherein the tumor is contacted with a DNA damaging agent by administering to the animal a therapeutically effective amount of a pharmaceutical composition comprising a DNA damaging compound.

28. The process according to claim 24, wherein the virus is an adenovirus.

29. A method of assessing the response of cells to the effect of viral therapy in conjunction with exposure of cells to ionizing radiation, comprising:

(a) growing cells in culture;

(b) exposing the cells with a selected virus.

(c) exposing the cells to an effective dose of ionizing radiation; and

(d) assessing the response of the cells to exposure to a virus and radiation.

30. The method according to claim 29, wherein the virus is adenovirus, HSV-1, retrovirus, or NDV.

31. The method according to claim 30, wherein the virus is adenovirus.

32. The method according to claim 30, wherein the virus is HSV-1.